

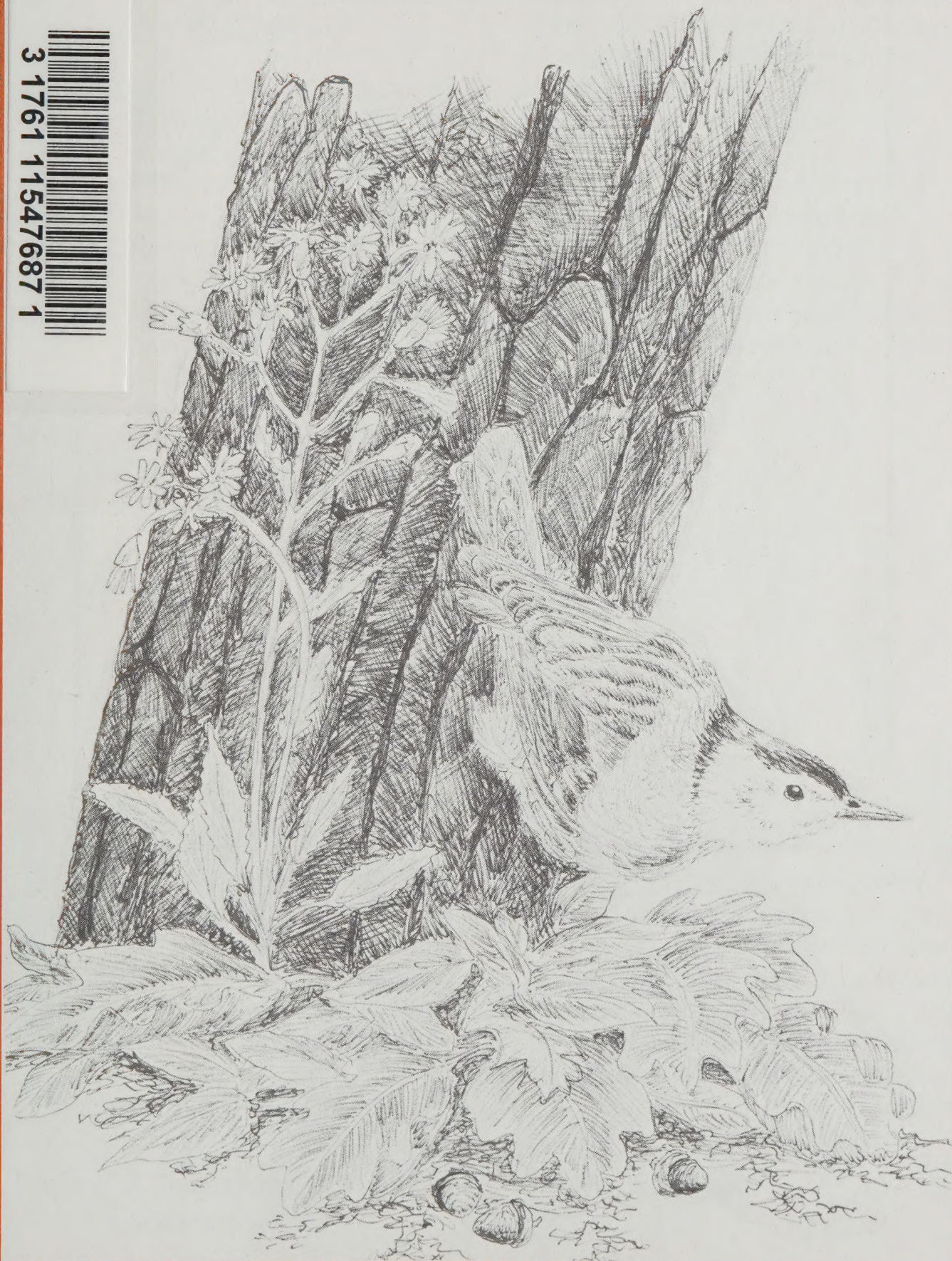


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Cedar Trail

Oak Savanna Ecology

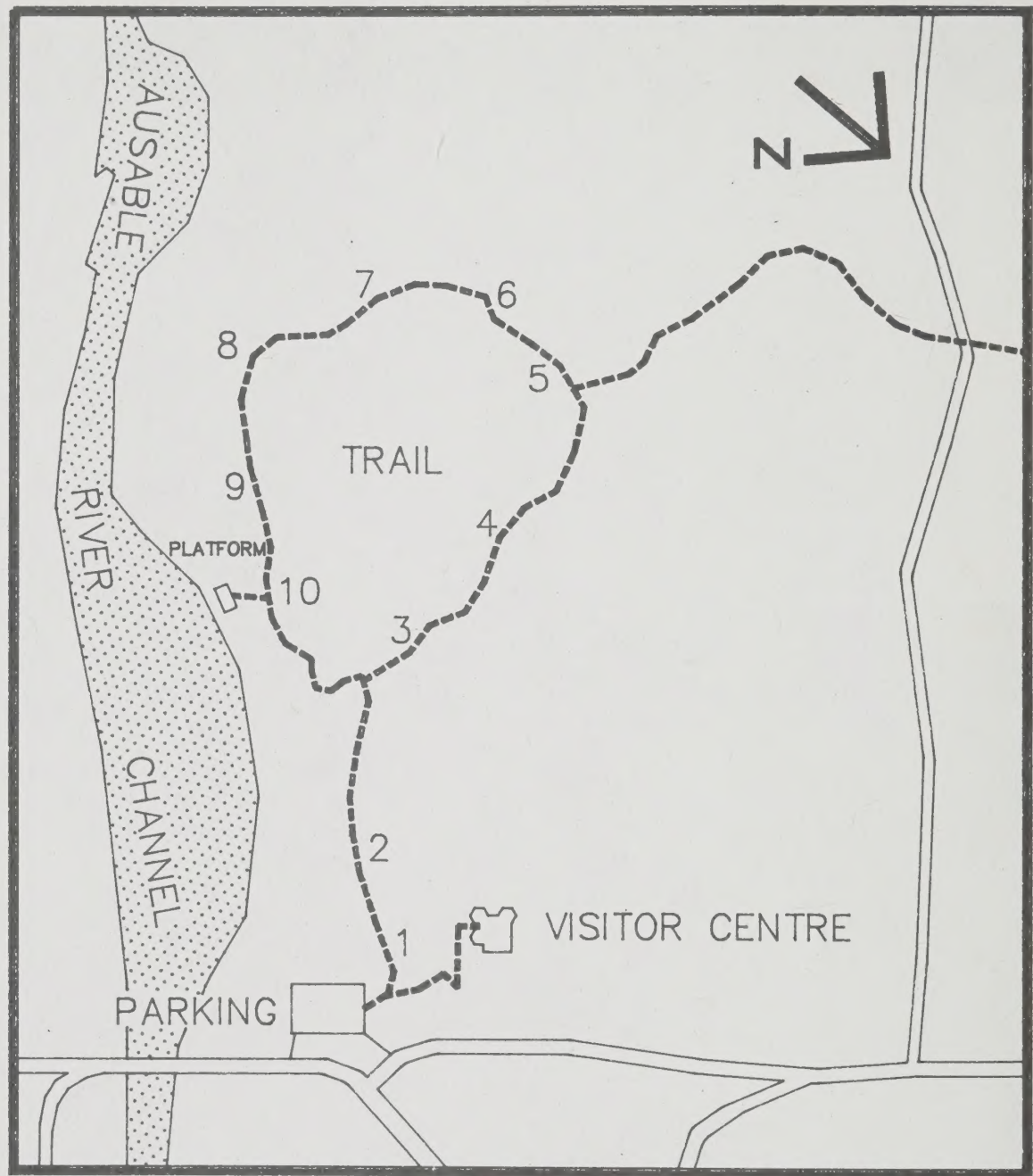
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Cedar Trail

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Illustrations by David Rider



Welcome to Cedar Trail. You are about to discover one of North America's rarest habitats; the Oak savanna. The numbered sections in this guide correspond to numbered posts along the trail. Each stop will explore one aspect of this unique habitat.

Plan at least one hour to explore this 2.3 km trail. This guide does not include any stops on the trail's extension to the beach. Take your time and quietly enjoy your surroundings and know that you will

*" ...see a world in a grain of sand
and a heaven in a wild flower."
William Blake*

Post 1: Sand, trees and grasses

Pinery. The name conjures up images of towering pine trees, blue lakes and reddish - pink granite rocks. One look at your surroundings and you know that Pinery paints a very different picture; a picture of sand, scattered oak trees and grass.

Much of Pinery is Oak savanna. This term refers to a plant community of widely spaced trees that have open crowns that may not overlap each other. Between the trees is a rich ground cover of prairie grasses, shrubs and flowers. Oak savanna is often considered to be a transition zone between prairie and the eastern deciduous forest. While Oak savanna is neither truly prairie or truly forest, it is the combination of the two habitats that gives Oak savanna its own unique identity.

Oak savanna is believed to have developed here about 4,000 - 8,000 years ago. Referred to as the "hypsihermal interval", the global climate at this time was warmer and drier than what we experience today. These climatic conditions encouraged the expansion of the prairies from central North America into previously forested southern Ontario.

When cooler, moister conditions returned, forests dominated, and prairie vegetation remained only where conditions were suitable. Oak savanna remains here today because of Pinery's infertile, well drained soils, and regular litter fires.



Post 2 Tug of War

In front of you is a grassy, open area with scattered trees. The sun loving prairie grasses and oak trees you see here, are constantly competing with each other. Given the chance, the trees and shrubs will quickly outgrow the sun loving grasses and flowers. Low amounts of rainfall and poor soil help to check the growth of trees and shrubs in a savanna, but there is another force that prevents the trees from dominating the system. That force is fire.

Fires have occurred in Pinery for thousands of years. Started by lightning, regular, low intensity ground fires maintain the open, grassy

meadows by removing small shrubs and trees. The more often a fire occurs, the more open, or "park like" the savanna becomes. Infrequent fires cause the savanna to have a more "scrubby" appearance with dense thickets of oaks and shrubs inside a meadow.

Consequently, because of this tug of war between forest and prairie, Oak savanna is a plant community that can gradually change its appearance over time. This variable appearance causes confusion about what Oak savanna actually looks like. As you walk this trail, you will see savanna that is open and park like and savanna that is thick with shrubs and scrubby in its appearance.



Post 3 What's in a name?

"Oak barrens", "orchard like" and "scrub savanna" are some of the various names given to Oak savanna by early European settlers. If Oak savanna has so many different names, how do researchers know what they are looking at? At this stop there are several clues to help you identify that what you are observing.

Pinery's Oak savanna is referred to as a "dry" savanna or a savanna that forms on sandy soils. As in all other habitats, there will be certain plant species that are more abundant in a dry savanna than others. These species are referred to as "indicator species." Two of the indicator species for a dry savanna are Black oak and Eastern red cedar.



Black oak is easily identified by its deeply grooved square bark segments. In Ontario, black oaks are almost wholly confined to extreme south western Ontario. If you travel any further north of Pinery, you will see fewer and fewer of these oaks, if you see any at all.



Dotted along the trail are Eastern red cedar trees. This cigar shaped evergreen grows in the same habitat as the Black oak, but is also far more widespread through out eastern North America. It is found as far west as Manitoba and as far east as Nova Scotia.

Regardless of the label, it's the combination of indicator species that help determine what the plant community is. Would Oak savanna by any other name be Oak savanna? Judging by the combination of plants that grow here, it certainly is!

Post 4 You can't see the savanna for the trees!

Take a seat. You are sitting in a cool, dark pine plantation. These White and Red pines were planted by forest managers in the 1950's. At that time, it was believed that Pinery was degraded by the ravages of logging and wild fire. To rehabilitate the park, pines were planted in the open "barrens". Any forest fires that occurred, were extinguished.

One of the key characteristics of Oak savanna, is its open canopy. When you walk through a savanna and look up, chances are you will see blue sky. In a pine plantation, little light penetrates to the forest floor.

Sun loving savanna plants cannot live in shade for extended periods of time. Eventually, the sun loving flowers and shrubs disappear. Even the hardy prairie grasses are gone. The pines are even beginning to over grow the sun loving oak trees.

Without the shrubs, trees and flowers, both shelter and food are gone for many animals. In a pine plantation, you may see the occasional Red Squirrel, but the total number and variety of animals is greatly reduced.

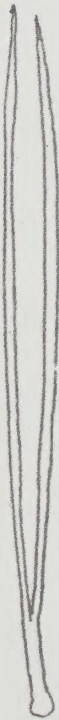
Eastern White Pine has thin, smooth greyish - green bark that becomes darker with age.

Its five long, needles in a bundle also make this tree easy to identify.



By now, you're probably shaking your head and saying, "what possessed them to do such a thing?" Hindsight is always perfect. In the 1950's, very little was known about Oak savanna. Based on the knowledge of the time, planting pines was a reasonable solution. Today, with an increased understanding of Oak savanna, the planted pines are being removed by Pinery's volunteer groups.

At the next stop, you may continue your guided walk on the Cedar Trail. Or, you may travel the extension to the beach. This guide does not include any stops on the Cedar Trail extension.



Red Pines have reddish, scaly bark. On older trees, the bark furrows into long, flat scaly ridges.

The needles of Red Pine are in bundles of two and are a shiny dark green.



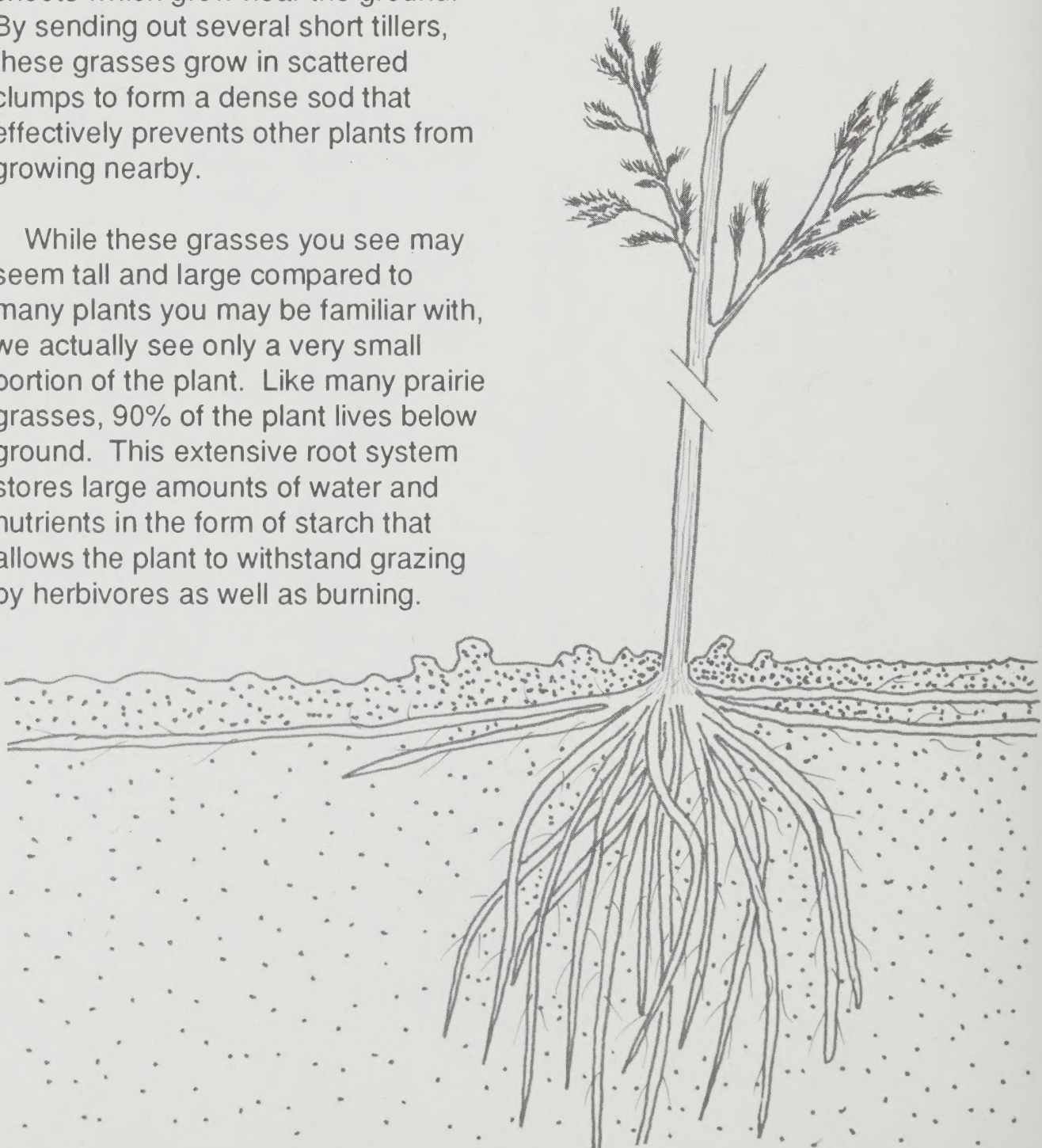
Post 5 Coming out of the dark

As you walk a few steps away from the pine plantation, the vegetation changes dramatically. Graceful, tall prairie grasses suddenly catch your eye. These grasses have their origins in North America's prairie region and their presence contribute to the open, almost limitless feeling of Pinery.

Taking advantage of the sunlight, these grasses grow and spread rapidly. Both Indian Grass and Little Bluestem, make use of tillers, or side shoots which grow near the ground. By sending out several short tillers, these grasses grow in scattered clumps to form a dense sod that effectively prevents other plants from growing nearby.

While these grasses you see may seem tall and large compared to many plants you may be familiar with, we actually see only a very small portion of the plant. Like many prairie grasses, 90% of the plant lives below ground. This extensive root system stores large amounts of water and nutrients in the form of starch that allows the plant to withstand grazing by herbivores as well as burning.

While easily ignored, grasses are important to the wildlife that lives in a savanna. Grass seeds provide a concentrated source of protein, carbohydrates and minerals. Seed eating birds, mice, voles and insects, all eat this plentiful food source. In turn, they attract other creatures to the savanna.



Post 6 Living on the edge

Very few species of animals are found only in Oak savanna and nowhere else. Instead, what you will find are creatures that prefer an "edge" or an area where two types of vegetation meet.

Eastern Blue Birds prefer a habitat with few trees and lots of open clearings. Oak savanna's meadows and trees provide ideal habitat for this rare bird. Easily recognized by its bright blue back and chestnut throat, the male's musical "chur chur - lee chur - lee" often announces his presence nearby. Conspicuously perched on a dead branch, they will scan the ground for their next meal of worms, caterpillars and other insects.



Eastern Bluebird

When finished feeding, you may see one of these thrushes flutter back to a nest in hollow tree or old woodpecker hole. The removal of dead trees in farm woodlots and the use of pesticides has taken a huge toll on Eastern Bluebird populations in Ontario. Pinery's hollow oak trees provides valuable refuge and habitat for nesting sites.

Another bird that takes advantage of the combination of openness and the Eastern red cedar trees in the background is the Rufous - sided Towhee. The male's black upper body and hood contrasts sharply with his chestnut sides and white underparts making this colourful sparrow instantly recognizable.

Towhees are often heard raking the ground by kicking both their feet backwards in the search for seeds and insects even before the familiar call of "drink your tea - ee - ee - ee" fills the air.

So what's living on the edge like? For these two birds, there probably is no better place to be!

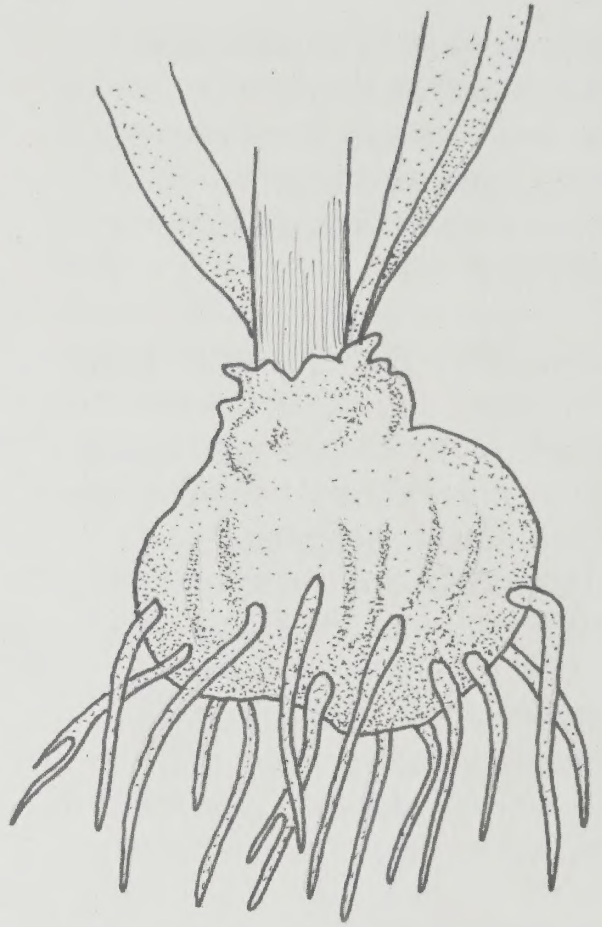


Rufous - sided Towhee

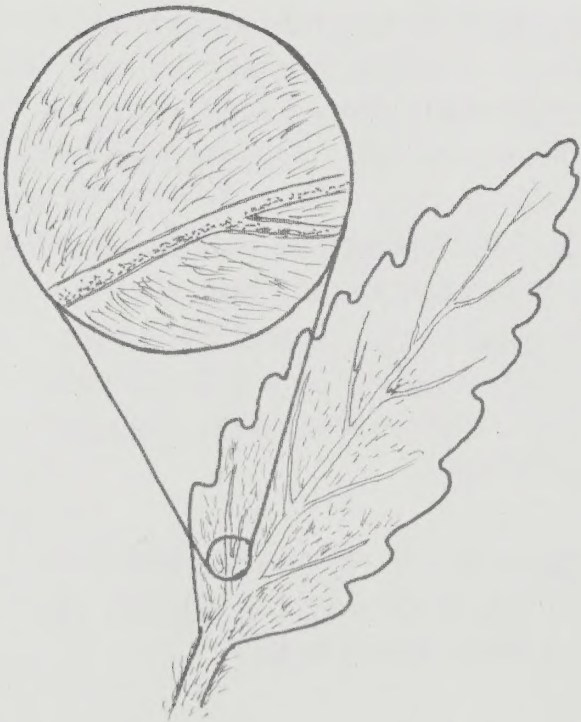
Post 7 Waste not - want not

Two of the factors that maintain an Oak savanna are low amounts of rainfall and sandy soil. Sand cannot hold water for an extended time. After it rains, water drains away quickly leaching nutrients from the soil as it goes. Both water and nutrients are precious commodities and cannot be wasted. Yet, despite these extreme conditions, the savanna's wildflowers produce a subtle show of colour throughout the year.

Rough Blazing Star stores energy in an underground stem or "corm" similar to a tulip bulb. In times of stress, the plant draws on its energy reserves to continue growing. The corm also gives the plant the ability to go dormant in times of extreme stress. If growing conditions become



too stressful, the plant simply shuts down and waits until the next year to begin its growth cycle over again.



Prairie ragwort has a different strategy. Its dense, fibrous roots grow very near the ground's surface, trapping water and nutrients from the surrounding soil. Like many flowering plants living in desert like conditions, the Prairie ragwort has very small leaves that are covered in fine hairs. These hairs prevent water from evaporating, and insulate the plant to keep it cool. In the fall, the Ragwort's circular set of leaves are still visible at the ground's surface. The leaves stay green throughout the winter months. In this way the plant has a head start in the spring, wasting little of the growing season.

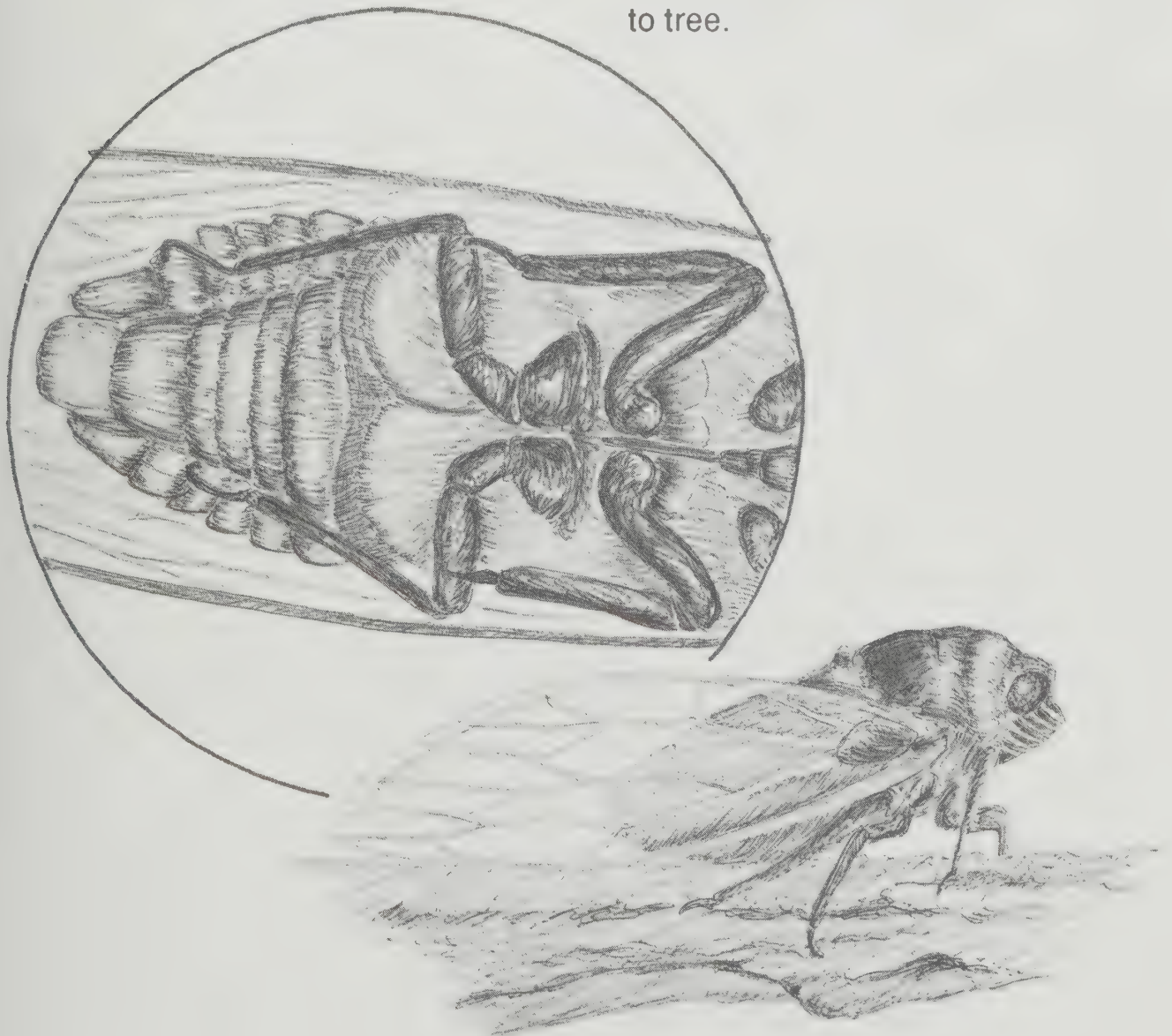
Post 8 A little evening music

Stop and listen for a low, buzzing sound similar to a motor boat sputtering to a start. This sound, most often heard at twilight, is the mating buzz of a male Scissor Grinder Cicada.

This buzz produced by the male to call to the females of his own species, is made with the aid of a "drum" and amplifiers. The drum, located on the underside of the insect is activated by muscles contracting and relaxing, which makes the vibration. In turn, this vibration is echoed and amplified in a large, hollow chamber.

Little is known about this insect other than it prefers to live in oak woods, making Pinery an ideal habitat. What is known is that they are the largest species of cicada found in Ontario, being 60 - 72 mm long or about the size of dragon fly.

Despite its large size, it can be a difficult insect to locate - even when it's singing. Like a ventriloquist, its buzz seems to come from several directions at once. Its black body and green wing veins, readily blends in with greyish coloured tree bark to further disguise this insect. Only occasionally do people see the Scissor Grinder flying from tree to tree.



In 1990, a park naturalist asked the Royal Ontario Museum in Toronto to identify this large cicada. Once identified, this cicada caused quite a buzz at the museum. The only other record of a Scissor Grinder Cicada the museum had came from Turkey Point, on Lake Erie in 1908!

Research has revealed many secrets about the savanna, yet there is still much to learn about this community. The Scissor Grinder Cicada is only one of the recently "discovered" mysteries of the savanna. How many more are there? Only continued research and conservation of this habitat will tell.

Post 9 From little acorns

No other group of trees has influenced the settlement of North America more than the oaks. Long honoured as strong and majestic, the "mighty" oaks provided settlers with food for livestock and shelter from storms. Game animals were plentiful in oak openings as acorns were food for every thing from White-tailed Deer to Passenger Pigeons. Even today we regard oak forests as valued recreational environments and wildlife habitat.

The Dwarf Chinkquapin oak in front of you is a rare oak species in Canada. Surviving only in south western Ontario, Dwarf Chinkquapin Oak is actually a shrub. Unlike many people's perception of what an oak should look like, it doesn't look mighty at all. Like all oaks though, this tree is equipped to survive what seems like the savanna's almost insurmountable odds of drought and fire. It's lengthy tap root penetrates deeply into the ground to obtain water and its bark insulates it from the heat of fire.

The one factor Dwarf Chinkquapin oak are not naturally equipped to survive is people. One early settler foreshadowed the savanna's demise when he wrote, "it is an extensive range of open, grove like woodland,

principally oak and the trees so dispersed as to not interfere materially with the plough." Settlement doomed the savanna by quickly converting it to agricultural fields and by extinguishing all fires that occurred.

Although widespread in North America at the time of settlement, Oak savanna virtually disappeared within 20 - 40 years. Today, oak trees and shrubs like this Dwarf Chinkquapin remind us that the oak savanna's fate is in our hands.





Post 10

As you relax by the river, take a moment to try and imagine how little Oak savanna is left in North America.

Before European settlement, Oak savanna covered about 13 million hectares of North America. Today, less than 0.02% of the original area remains. Pinery Provincial Park is about 2,500 hectares in size and

approximately 60% of the park is covered by Oak savanna. This means that Pinery's boundaries, protects almost 50% of North America's remaining Oak savanna.



Post 11

This delicately balanced ecosystem is on the verge of extinction. Will our children be able to marvel at this unique habitat and help equally unique inhabitants? Only the support of conservation minded people will assure the future of Canada's Oak savanna. Will you help?

If you wish to keep this guide, please pay at the introductory sign. If not, please place it in the box at this post so that others may use it later. Your payment covers the cost of the guide and supports the projects of The Friends of Pinery Park.

Thank you.

Other

Pinery Trails This is just one of nine trails maintained in Pinery Provincial Park. Each trail has been developed to introduce you to some aspect of Pinery's natural or cultural history and has either interpretive sign posts or a guide similar to this one. The other eight trails are listed below.

Carolinian Trail is a 1.8 km trail that travels along a dune ridge allowing you to look over the Ausable floodplain. The trail guide describes the ecology of the Carolinian Forest that is found along this trail.

Bittersweet Trail is 1.8 km long and passes through a mature oak-pine forest to the banks of the Old Ausable River Channel. The guide for this trail offers insight into the varied lives of Pinery's mammals.

Riverside Trail is a gently rolling trail that meanders along the banks of the Old Ausable River Channel. This trail is wheelchair accessible and the guide describes the history and ecology of the Ausable River.

Hickory Trail is 1 km long and passes through stands of shagbark hickory and red oak along the banks of the Old Ausable River Channel.

Wilderness Trail is a 3 km trail that will take you through some of the more remote forests in the park and then across the dunes to a viewing platform overlooking Lake Huron.

Lookout Trail is a trail that travels up one of the largest dunes in the park to a spectacular view of the Thedford Bog.

Pine Trail is 0.8 km in length and will lead you through stands of red pine and under towering oaks.

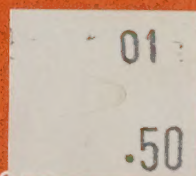
Nipissing Trail is 2 km long with a substantial climb to the top of the highest dune ridge in the park. Both the lake and the Thedford Bog can be seen from the lookout on this trail.

All trails are self guided. Interpretive brochures for Bittersweet, Riverside and Carolinian trails are available at the trail entrance or the Visitor Centre. The riding of bicycles on any of Pinery's trail is prohibited by law at all times.

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